

REMARKS

Reconsideration and allowance of this application in view of the following remarks are respectfully requested. Claims 1-18 are currently pending in this application. Claim 1 has been amended to incorporate the subject matter of claim 2 and claim 5 has been placed into independent form. Claim 2 has been cancelled.

As a preliminary matter, before addressing the merits of the Office Action, Applicants respectfully request withdrawal of the finality of the present Office Action because the Examiner has improperly taken "Official Notice" of Ward et al. (U.S. Patent No. 5,815,809) and Schulz (U.S. Patent No. 5,648,967) as outlined in MPEP §2144.03 by not using those references in a proper rejection. The Examiner did not indicate how or why one of ordinary skill in the art would have been motivated to combine the teachings of Ward et al. and/or Schulz with the other references cited in the rejections. Accordingly, Applicants respectfully request withdrawal of the finality of this Office Action.

Claims 1-3 and 9-11 were rejected under 35 U.S.C. § 103 (a) over Ramesh et al. (U.S. Patent No. 5,668,820; hereafter "Ramesh") in view of Anno et al. (EP0660558A2; hereafter "Anno"). Claims 4, 7 and 12-16 were rejected under 35 U.S.C. § 103 (a) over Ramesh in view of Anno and further in view of Kuroda et al. (U.S. Patent No. 5,432,800; hereafter "Kuroda"). Claims 5-6, 8 and 17-18 were rejected under 35 U.S.C. § 103 (a) over Ramesh in view of Anno and further in view of Bach et al. (U.S. Patent No. 5,475,686; hereafter "Bach"). The rejection of claim 2 is moot since Applicants have cancelled that claim. Applicants respectfully traverse every other rejection because the applied combinations of (a) Ramesh and Anno; (b) Ramesh, Anno and Kuroda and (c) Ramesh, Anno and Bach, do not teach or suggest every feature recited in the rejected claims.

For example, none of the references, whether analyzed alone or in combination, teach

or suggest a data transmission method comprising, among other elements, grouping bits to be transmitted in blocks having the minimum size of 288 bits, or 290 bits, as recited in independent claims 1 and 3, respectively. Further, none of the references, whether analyzed alone or in combination, teach or suggest a data transmission method comprising, among other elements, puncturing the bits obtained by deleting bits from each block so that blocks containing no more than 456 bits will be obtained, as recited in independent claim 1, or puncturing the coded bits obtained by deleting 132 bits from each block, as recited in independent claim 3.

Ramesh merely teaches punctured convolution coding and puncturing in connection with data blocks of finite size, e.g., k-tuples or n-tuples, to improve bit error rate while maintaining the same data rate. However, the claimed methods recited in independent claims 1 and 3 are directed to increasing data rate. Further, Ramesh does not teach data blocks, e.g., k-tuples or n-tuples, of the claimed finite size, e.g. no more than 456 bits, or 588 bits. Therefore, Ramesh does not teach or suggest puncturing the bits obtained by deleting bits from each data block so that the data blocks obtained will contain no more than 456 bits, as recited in independent claim 1, or puncturing the coded bits obtained by deleting 132 bits from each block, as recited in independent claim 3. Additionally, Ramesh does not teach or suggest grouping bits to be transmitted in blocks having a minimum size of 288 bits, as recited in independent claim 1, or having a size of 290 bits, as recited in independent claim 3.

The Office Action relied on Anno for its teachings of GSM convolutional coding to remedy the deficiencies of Ramesh to provide an interleaving process. However, Anno merely teaches a data block having a size of 456 bits, and fails to remedy the deficiencies of Ramesh because Anno fails to teach or suggest blocks having a minimum size of 288 bits, as recited in claim 1, or blocks having a size of 290 bits, as recited in claim 3. Thus, the applied combination of Ramesh and Anno does not teach or suggest all of the features of independent

claim 1 and independent claim 3 (and dependent claims 9-11).

Neither Kuroda nor Bach, whether analyzed alone or in combination, would remedy the deficiencies of the applied combination of Ramesh and Anno because Kuroda and Bach do not teach or suggest blocks having a minimum size of 288 bits, as recited in claim 1 or claim 5, or blocks having a size of 290 bits, as recited in claim 3. As such, the applied combinations of Ramesh, Anno and Kuroda and/or Bach do not teach or suggest all of the features of independent claim 1 (and its dependent claims 4 and 9-18), independent claim 3 (and its dependent claims 4 and 9-18) and independent claim 5 (and its dependent claims 6-8).

Accordingly, independent claim 1 (and its dependent claims 4 and 9-18) and independent claim 3 (and its dependent claims 4 and 9-18) are allowable. Reconsideration and withdrawal of the rejections of claims 1-18 are respectfully requested.

Applicants further traverse each rejection because there is no suggestion or motivation to modify the applied references or to combine their teachings. To establish the *prima facie* case of obviousness, all claim limitations must be taught or suggested by the prior art and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill on the art, to modify the references or to combine reference teachings.

As explained above, the Office Action speculated that one of ordinary skill in the art would have been motivated to combine the teachings of Ramesh and Anno to provide an interleaving process in Ramesh. However, Applicants traverse the rejection of claims 1, 3 and 9-11 because one of ordinary skill in the art would not have been motivated to modify the teachings of Ramesh in accordance with Anno. The Office Action's identified motivation to combine is merely a product of impermissible hindsight analysis.

Anno is merely directed to an interleaving method, but there is no suggestion or

motivation in Anno to combine this interleaving method with the punctured convolutional coding system and method of Ramesh, nor would one skilled in the art be motivated to do so.

Therefore, there is not sufficient motivation or suggestion to modify the teachings of Ramesh with the teachings of Anno to support a valid rejection under 35 U.S.C. § 103.

Accordingly, independent claim 1 (and its dependent claims 4 and 9-18) and independent claim 3 (and its dependent claims 4 and 9-18) are allowable. Reconsideration and withdrawal of the rejections of claims 1-18 are respectfully requested.

Furthermore, notwithstanding the Office Action's apparent improper taking of "Official Action" and its indication that Ward et al. teaches blocks having a minimum size of 288 bits or 290 bits, Applicants further assert that Ward et al. fails to remedy the deficiencies of the applied combinations of Ramesh, Anno and Kuroda and/or Bach discussed above. Ward et al. does not teach or suggest a data transmission method comprising, among other elements, (1) carrying out convolutional coding for blocks having a minimum size of 288 bits with a code rate of $\frac{1}{2}$ by using GSM convolutional coding polynomials so that the block size is 584 bits after coding, as recited in independent claim 1; (2) carrying out convolutional coding for blocks having a size of 290 bits with a code rate of $\frac{1}{2}$ by using GSM convolutional coding polynomials so that the block size is 588 bits after coding, as recited in independent claim 3; and (3) carrying out convolutional coding for blocks having a minimum size of 288 bits with a code rate of $\frac{1}{2}$ by using GSM convolutional coding polynomials, as recited in independent claim 5. Additionally, Ward et al. does not teach or suggest a data transmission method comprising, among other elements, puncturing the bits obtained by deleting bits from each block so that blocks containing no more than 456 bits will be obtained, as recited in independent claims 1 and 5, or puncturing the coded bits obtained by deleting 132 bits from each block, as recited in independent claim 3.

Ward et al. is merely directed to a mobile satellite system having a data channel in

blocks of 288 bits, but there is no suggestion or motivation in Ward et al. to use this block size when interleaving as in of Anno and or in punctured convolutional coding.

As explained above, the Office Action speculated that one of ordinary skill in the art would have been motivated to combine the teachings of Ramesh and Anno to provide an interleaving process in Ramesh. However, even if the teachings of Ward et al. are considered in combination with the teachings of Ramesh and Anno to provide an interleaving process in Ramesh, one of ordinary skill in the art would not have been motivated to modify the teachings of Ramesh and Anno in accordance with Ward et al. Any motivation to combine the teachings of Ramesh and Anno in accordance with Ward et al. would merely be a product of impermissible hindsight analysis because such a combination would only improve interleaving efficiency or bit error rate (as taught by Ramesh and Anno) and not provide a solution for high bit rate communication as claimed.

Therefore, there is not sufficient motivation or suggestion to modify the teachings of Ramesh and Anno with the teachings of Ward et al. to support a valid rejection under 35 U.S.C. § 103.

Accordingly, independent claim 1 (and its dependent claims 4 and 9-18), independent claim 3 (and its dependent claims 4 and 9-18) and independent claim 5 (and its dependent claims 6-8) are allowable. Reconsideration and withdrawal of the rejections of claims 1 and 3-18 are respectfully requested.

Moreover, notwithstanding the Office Action's assertion that Schulz teaches blocks containing no more than 456 bits, Applicants respectfully submit that Schulz does not remedy the deficiencies of the applied combinations of Ramesh, Anno and Kuroda and/or Bach discussed above because Schulz does not teach or suggest a data transmission method comprising, among other elements, carrying out convolutional coding for blocks having a minimum size of 288 bits or a size of 290 bits with a code rate of $\frac{1}{2}$ by using GSM

convolutional coding polynomials, as recited in independent claims 1, 3 and 5.

Schulz is merely directed to a method of transmitting information in digital radio system in which blocks of 240 bits are formed and coded to be 488 bits. The blocks of Schulz are neither a minimum of 288 bits or 290 bits as recited in independent claims 1, 3 and 5, nor are the blocks of Schulz convolutionally coded with a code rate of $\frac{1}{2}$ by using GSM convolutional coding polynomials so that the block size is 584 bits or 588 bits after coding as recited in independent claims 1 and 3, respectively. Furthermore, Schulz does not teach or suggest puncturing the coded bits obtained by deleting 132 bits from each block, as recited in independent claim 3.

Moreover, there is no suggestion or motivation in Schulz to combine the 240 bit block size of Schulz or its puncturing method with the interleaving method of Anno and the punctured convolutional coding system and method of Ramesh, nor would one skilled in the art be motivated to do so.

As explained above, the Office Action speculated that one of ordinary skill in the art would have been motivated to combine the teachings of Ramesh and Anno to provide an interleaving process in Ramesh. However, even if the teachings of Schulz are considered in combination with the teachings of Ramesh and Anno to provide an interleaving process in Ramesh, one of ordinary skill in the art would not have been motivated to modify the teachings of Ramesh and Anno in accordance with Schulz. Any motivation to combine the teachings of Ramesh and Anno in accordance with Schulz would merely be a product of impermissible hindsight analysis because such a combination would only improve interleaving efficiency or bit error rate (as taught by Ramesh and Anno) and not provide a solution for high bit rate communication as claimed.

Therefore, there is not sufficient motivation or suggestion to modify the teachings of Ramesh and Anno with the teachings of Schulz to support a valid rejection under 35 U.S.C. §

103.

Accordingly, independent claim 1 (and its dependent claims 4 and 9-18), independent claim 3 (and its dependent claims 4 and 9-18) and independent claim 5 (and its dependent claims 6-8) are allowable. Reconsideration and withdrawal of the rejections of claims 1 and 3-18 are respectfully requested.

For at least the foregoing reasons, the Applicants submit that the claims are in condition for allowance. Timely notice to that effect is therefore respectfully requested.

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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